National Institute of Environmental Health Sciences

Climate change, extreme weather events, air pollution and respiratory health in Europe

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Abstract:

Due to climate change and other factors, air pollution patterns are changing in several urbanised areas of the world, with a significant effect on respiratory health both independently and synergistically with weather conditions; climate scenarios show Europe as one of the most vulnerable regions. European studies on heatwave episodes have consistently shown a synergistic effect of air pollution and high temperatures, while the potential weather-air pollution interaction during wildfires and dust storms is unknown. Allergen patterns are also changing in response to climate change, and air pollution can modify the allergenic potential of pollens, especially in the presence of specific weather conditions. The underlying mechanisms of all these interactions are not well known; the health consequences vary from decreases in lung function to allergic diseases, new onset of diseases, exacerbation of chronic respiratory diseases, and premature death. These multidimensional climate-pollution-allergen effects need to be taken into account in estimating both climate and air pollution-related respiratory effects, in order to set up adequate policy and public health actions to face both the current and future climate and pollution challenges.

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Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Air Pollution, Extreme Weather Event, Meteorological Factors, Precipitation, Temperature

Air Pollution: Allergens, Dust, Interaction with Temperature, Ozone, Particulate Matter, Other Air Pollution

Air Pollution (other): SO2, NO2, CO

Extreme Weather Event: Hurricanes/Cyclones, Wildfires, Other Extreme Event

Extreme Weather Event (other): dust storms

Temperature: Extreme Cold, Extreme Heat, Fluctuations

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location: ☑

resource focuses on specific location

Non-United States

Non-United States: Europe

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Morbidity/Mortality, Respiratory Effect

Respiratory Effect: Asthma, Chronic Obstructive Pulmonary Disease, Upper Respiratory Allergy, Other Respiratory Effect

Respiratory Condition (other) : respiratory mortality

Population of Concern: A focus of content

Population of Concern: ☑

populations at particular risk or vulnerability to climate change impacts

Children, Elderly, Low Socioeconomic Status

Resource Type: ☑

format or standard characteristic of resource

Review

Timescale: ☑

time period studied

Time Scale Unspecified